2004 SBM OPERATIONS MANAGEMENT FINAL

Time: 180 minutes Max marks: 100

1. What do you mean by "the mission" of an organization?

(5 marks)

2. The daily sales of wheat in a shop for the last ten days are given below. Predict the sales for the day 11 using grand average, three day moving average, and exponential smoothing with smoothing parameter 0.2.

Day	1	2	3	4	5	6	7	8	9	10
Sales (kg)	154	145	140	153	140	159	162	163	137	162

(10 marks)

3. The layout of a jobshop with five departments is given below.

A	B	C
D	E	

The number of trips between departments in a year was as follows:

	A	B	C	D	E
A	-	178	165	115	192
B		-	125	133	103
C			-	107	186
D				-	137
E					-

Determine the total cost of travel in a year if the cost per unit distance per trip between departments (in Rupees) is given below:

	A	B	C	D	E
A	-	70	60	70	50
B		-	80	70	80
C			-	50	60
D				-	70
E					-

The movement between shops is on a rectangular basis and the distance between shops is one unit.

(10 marks)

4. Explain the three strategies for meeting capacity with demand.

(5 marks)

5. In a tailoring shop, there are two tailors Ramu and Raju. The pending orders at 8:00 hrs are detailed below:

Customer	Processing Time	Due Time
Aysha	4	14:00
Beena	3	16:00
Geetha	4	12:00
Neena	6	10:00
Seetha	5	15:00

Schedule the jobs of the customers using Critical Ratio rule and prepare a Gantt chart for the two tailors.

(10 marks)

6. A table consists of a top and four legs. The MPS calls for 100 tables to be produced in Week4 and 400 in week 6. The assembly operation takes one week. Develop a Material Requirements Plan using the following inventory data.

Data Category	Top	Leg
Lot sizing rule	POQ(P=2 weeks)	FOQ=600 units

Lead time	2 weeks	1 week
Scheduled receipts	50 in week 1	400 in week 4
Beginning / on hand inventory	25	400

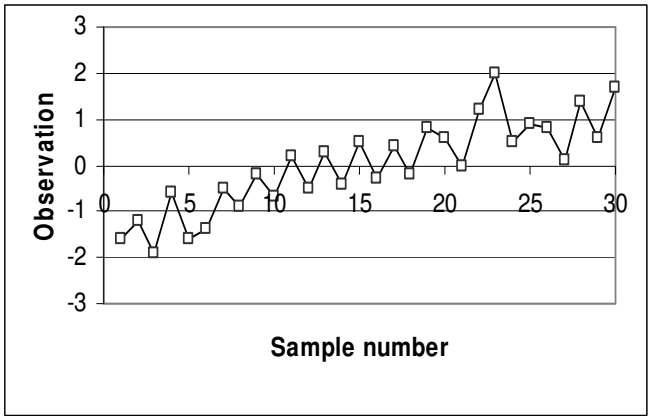
Identify the actions required.

(10 marks)

7. Explain the possible benefits of ISO9000 certification.

(5 marks)

8. Explain what do you mean by "a process is in control". From the following chart, is the process in control? Why?



(5 marks)

9. A company purchased a machine to make PVC pipes. They measured the wall thickness of the first fifty pipes with the following results:

1.046	1.032	0.981	1.011	0.955	1.023	0.986	1.009	1.032	1.121
1.097	1.003	1.019	1.057	1.021	0.971	1.002	0.952	1.049	1.074
1.063	0.928	0.991	1.044	0.977	0.996	0.993	1.055	0.983	0.987
0.967	0.924	1.01	0.948	1.095	1.05	1.012	0.995	1.021	1.059
0.982	0.988	0.919	1.008	1.124	0.99	1.007	1.04	1.026	1.023

Make a neat histogram of these measurements. What is the shape of the histogram? Comment on the capability of the machine if the customer requires a wall thickness of 1.00+/0.05mm.

(10 marks)

10. A UPS should have a nominal output voltage of 230V. A sample of 4 units is taken every hour and tested for process control with the following results after 25 samples: $\sum x = 6910.6$ $\sum R = 316.06$. Calculate the control limits for the process, if for n=4, A_2=0.729 and D_4=2.282. If in the next hour, four samples gave the values 236, 239, 238, 243, what action will you take on the process?

(10 marks)

11. Write short notes on any four: a) Quality Circles b) Quality Costs c) Robust Design d) Theory of Constraints e) Business Process Reengineering f) Learning Curve

(4X5=20 marks)